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ABSTRACT

This report describes the work of the Study Methods Group, which uses qualitative research methodologies to determine how Open University students approach learning and why they adopt a particular approach. Research considers student orientation to learning, the relationship of learning outcomes to learning approach, and student development as learners. The report also discusses other evaluation methods and research on student learning. (Author/CJ)

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THE WORK OF THE STUDY METHODS GROUP

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Abstract

This paper describes the work of the Study Methods Group and relates it to other evaluative research in the Open University. It explains why we are adopting qualitative methodologies to find out how Open University students go about learning and why they adopt particular approaches.

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Introduction

This paper introduces the work of the Study Methods Group. In particular it explains why we are adopting qualitative methodologies to find out how O.U. students go about learning and why they adopt particular approaches.

We shall briefly look at the role of qualitative methodologies in evaluation carried out in I.E.T. and how the methodologies relate to the research findings.

The paper then discusses methodologies of evaluation and research in student learning, particularly the approach of the Study Methods Group. The literature on student learning is briefly reviewed, especially in relation to study methods in The Open University.

Finally, we outline the details of our 1980 study on the Social Science Foundation Course.

The paper is divided into the following sections.

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1. Evaluation in the O.U. - The Role of Qualitative Methodologies

We shall not attempt a comprehensive review of evaluative research in the O.U. but instead look at three studies to examine their research findings and how these are related to their particular methodology adopted. We are concerned with the role that qualitative methodologies have taken in these evaluation studies.

(i) Evaluation using Feedback Questions

The use of feedback questions has been developed by Henderson & Nathenson (1976) in the context of developmental testing for credit and subsequently perfected as a general technique for using student feedback to improve learning materials. It is worth looking at this method of evaluation as it has gained considerable popularity in the Course Development Division of the Institute of Educational Technology as almost the accepted procedure for improving learning materials.

In their first study Henderson & Nathenson (1976) used what they called "self-assessment review questions" to obtain student performance data and "feedback-questions" to gather students' reactions to the teaching material, i.e. clarify, workload and comments on the teaching strategy.

Improvements to the teaching material were subsequently made in response to the performance data and questionnaire responses.

The majority of the feedback questions appear to have been closed-ended and related to specific details of the instructional material. Presumably this somewhat narrow approach to evaluating the learning materials was considered appropriate, as the course being studied adopted a highly structured approach to teaching the "Elements of Music".

This procedure for evaluation was developed into an integrated feedback system for collecting data when trying out learning materials (Nathenson & Henderson, 1979). In presenting a review of their work in this later publication

the role of illuminative evaluation was recognised as an important approach for collecting data on the process of learning.

"The student try-out of a programmed text designed to teach techniques of statistical correlation might be expected to emphasise the goal-orientated approach (though without neglecting more illuminative data also), whereas the try-out of a project-based course would probably require considerable stress on illuminative approaches (but without neglecting some examination of the extent to which the teacher's intents have been achieved)."

In spite of appreciating the value of illuminative evaluation in a general sense, Nathenson & Henderson (1979) seem to be pessimistic about actually using it in practice.

"In the context of student try-out it will certainly, in most cases be impractical to use goal-free evaluation or illuminative approaches in their pure forms. Formative evaluation is after all, a highly action-orientated form of evaluation, in which the aim is to provide information which enables the revision and thus improvement of educational materials."

This statement seems rather surprising particularly when Parlett & Hamilton (1972) have stressed that illuminative evaluation is methodologically eclectic and thus a "pure form" would be difficult to identify.

Rather than pursue this particular point, we shall look at one study in detail which attempted to evaluate a number of teaching strategies in one course unit in the Technology Foundation Course (T100), (Nathenson, 1978). In this more recent work, open-ended questions, which are part of a qualitative methodology, were used as well as the closed-ended "feedback questions". Thirteen teaching strategies were identified in this unit: a study guide, aims and objectives, flagging of terms and concepts, in-text questions followed by answers, self-assessment questions, end of unit summaries etc.: in fact almost all the techniques used in O.U. distance teaching material to gain the active involvement of the learner. Feedback questions, both closed and open-ended were designed to gain students' reaction to the teaching

material as they worked through the unit as part of their O.U. course, i.e. in natural settings. The feedback questions were built into the text:

"Each feedback question was interpolated into the unit text at a point immediately following the particular teaching strategy to which it referred. It was hoped that this proximity would enable students to provide feedback about various aspects of the teaching while the teaching was still fresh in their minds."

The student reactions to the "self-assessment questions" (S.A.Q.s), give a good impression of the type of results obtained, and are particularly interesting as S.A.Q's are regarded as one of the most important ways for encouraging students active involvement with the correspondence text. From a sample of twenty students, fourteen supplied feedback data; about one quarter of the students conscienciously attempted and wrote answers to all the S.A.Q's; these could be described as "model students". About one quarter did not answer any of the S.A.Q's and this group said their main priority was the required assessment questions, and about a half answered some of the questions.

This response rate data to closed-ended questions is typical of a survey type approach to evaluation, although the sample is rather small.

The open-ended question yielded interesting responses. A large proportion of students commented spontaneously that they could not see the relationship between the S.A.Q. and the teaching material. Students often were not clear what the question was asking, how to respond to it and sometimes why the question was even important to answer. Some students commented that they did know what to do when they got a question wrong. This seemed to create most problems for those "model students" who could not get help to diagnose their problems from re-reading the unit. What seem to be the crucial issues for students' usage of the S.A.Q. were obtained from open-ended questions.

We have looked at this method of using inserted feedback

questions (FBQs) in some detail partly because of the popularity of this method in I.E.T. but also because what appear to be the most important insights of how students use the learning materials are derived from open-ended questions and spontaneous comments, rather than the closed-ended feedback questions. Only by adopting a qualitative approach to evaluation, part of which is open-ended questions, can we understand how and why students answer as they did and know what to do to improve the learning materials.

(ii) Evaluation of an O.U. Course in a Conventional University

In contrast to evaluation based primarily on feedback questions, Brew & McCormich (1979) used an illuminative approach to evaluate an O.U. course which was adopted in its entirety at Essex University in place of the traditional lecture - tutorial course. They used a wide variety of methods for data collection: quantitative techniques, i.e. questionnaires on student attitudes, background and performance data on assignments and qualitative techniques, i.e. observations, group discussions and individual depth interviews.

The interviews revealed that students had difficulties handling the correspondence teaching material. For example, a majority of them did not know in what detail to study the material, in spite of study guides and self-assessment against which to check their learning. Students were found to hold generally very different conceptions of learning for their university studies. One view was that the material presented in lectures was a framework or skeleton of key ideas on which to develop their own thinking. The other view was to see the lectures as the whole course which represented the subject matter that was required for assessment and examination. Brew & McCormick concluded that the O.U. teaching material created problems for students with either conception of learning. Those who wanted to develop their own learning from a presented skeleton found the close structure of O.U. materials hindered their approach. Students who, in traditional courses used their lecture notes as the whole course which was studied for the examination, had difficulties

in the sheer volume of written material presented in the O.U. course. They were unable to identify the basic essential ideas in the units.

"The nature of the text is such that relationships between concepts are clearly spelled out and links between ideas are drawn. In other words, the course implicitly appears to assume that knowledge consists of ideas and concepts in particular relationships, and that hence learning has to be effected in terms of such relationships .... students cannot without difficulty and a great deal of self confidence order the concepts as they wish, there are potential probelms for both the passive and the active learner." (Brew & McCormick, 1979).

These findings relate to one course in a specific context, i.e. an O.U. course on computers used by conventional second year under-graduates. We shall not discuss what implications, if any, the findings have for the design of courses for O.U. students.

The key point in discussing this study, is that the most important evaluation findings were derived from qualitative methods: interviews and group discussions. An evaluation based on closed-ended feedback-questions relating to the teaching strategy, as represented by the details of the correspondence text, would have almost certainly failed to detect what, from students' perspectives were the essentials of their learning experience, and would have failed to provide an adequate basis for improving the course.

(iii) Evaluation of O.U. Case-Study Television Programmes

The Audio-Visual Media Research Group has carried out a vast amount of evaluation, but their work on the effectiveness of case-study programmes is particularly interesting. Besides collecting information on individual programmes some attempt has been made to generate hypotheses for how students approch learning from these programmes, (Bates & Gallagher, 1977). The approach of these evaluations has been to develop an in-depth understanding of programmes by analysing the content of related course material, to gain students' reactions by questionnaires, using both pre-coded and open-ended questions,

and group discussions. It seems that many of the hypotheses on how students tackled programmes came from the qualitative studies.

In a recent research proposal, Bates (1979) has stressed the problem of research and evaluation into educational television.

"A major reason for the lack of progress in media research has been the lack of an adequate theoretical framework. Much of the laboratory-controlled experimental research in this field could best be described as rampant empiricism - a comparison of one medium of teaching with another medium of teaching, without any attempt to place the experiment in any theoretical framework about how students learn, the conditions which affect learning on the pedagogical aims and philosophy behind the teaching."

The criticsm of adopting an atheoretical approach to research and evaluation could be equally applied to a considerable amount of course evaluation which has adopted a purely survey methodology.

The research programme outlined by Bates (1979) places a considerable emphasis on interview techniques for establishing how students are actively constructing meaning from the programmes and to ensure that hypotheses are generated from the learner's experience rather than entirely from the researchers preconceptions.

By looking at three examples of evaluation, we have tried to demonstrate the value of using qualitative methodologies, although in these studies, both quantitative and qualitative methods have been used simultaneously. Qualitative research has not been the "dominant paradigm" in I.E.T., but these studies indicate some of the potential of the methodology, which has not yet been fully realised. Even after almost ten years of evaluating courses, we know relatively little about how students handle our learning materials. So what is the range of methodologies for evaluation, how have they been employed, and what are the trends outside the Open University?

2. Methodologies of Evaluation

Outside the Open University, both in studies described as evaluation and also research into student learning, there has been a trend towards qualitative methodologies. For example, Entwistle & Hounsell (1979) describe a trend towards qualitative methodologies in natural settings so as to increase the relevance of the findings. It is interesting that the trend is identified by research workers who have established a reputation with quantitative studies, relating together personality characteristics, learning styles and academic achievement. Similarly, (Elton & Laurillard, (1979) in comparing qualitative methodologies with traditional physical science models of research in education, felt that:

"By increasing the relevance of research design to the practising teacher, in general, we reduce the reliability of the results of the research. In moving to a new paradigm, we must therefore find means which will minimise this reduction, although this may require a re-definition of the concept of reliability in line with the new paradigm."

By making reference to a "new paradigm" for evaluation and research in student learning, what are they referring to?

(i) Traditional curriculum Evaluation

Evaluation has always been a central concept in educational technology; in fact Rowntree (1976), felt that the emphasis of work in I.E.T. had changed away from a prescriptive approach to course design and identified evaluation as the critical ingredient of educational technology.

The traditional approach to curriculum evaluation is related to the objectives model of educational technology, i.e., (i) Identify objectives (ii) design the learning experiences (iii) evaluate the effectiveness of the learning activities in achieving the objectives (iv) improve the learning experiences in the light of the evaluation.

The focus of the evaluator was on defining the objectives and designing techniques for determining their achievement

i.e., a purely goal-orientated approach.

This emphasis on goals is clearly stated by Scriven (1967):

"Evaluation is itself a methodological activity which is essentially similar whether we are trying to evaluate coffee machines or teaching machines, plans for a house or plans for a curriculum."

The attention to measurement of the achievement of goals or objectives in evaluation, accompanied a large amount of educational research to compare the effectiveness of different teaching programmes in achieving the same objectives. The research methods have attempted to replicate the physical science paradigm of experimentation and control of variables.

The pre-specification of goals or behavioural objectives for any educational activity is problematic. Firstly, because it ignores the learners personal experience of process of the learning, which may be of equal or greater importance than the goal or product, for example, in open-ended project work. And secondly, because in some subject areas, particularly humanities, outcomes are much less easy to spell out in advance. (Eisner, 1967).

(ii) Alternative Approaches to Evaluation

As a response to these objections to objectives and the excesses of goal-orientated evaluation, Scriven (1972), in what seemed like a complete change of position, advocated "goal-free" evaluation. This approach stressed the need to go beyond the intended goals of an educational programme, but to look for the un-intended side-effects. It was claimed that familiarity with goals would influence the evaluation in the direction of the indended outcomes. Thus in Scriven's strictly goal-free model, external evaluators are necessary who are unfamiliar with the educational programme in question.

This approach of "goal-free evaluation" has been

developed and used by Parlett & Hamilton (1972). Their approach termed "illuminative evaluation" aimed to describe and interpret all aspects of an educational programme; it is "methodologically eclectic, using interviews, questionnaires, participant observation and the analysis of documents". The methodology is derived from sociological and anthropological research paradigms rather than those of the physical science.

The insights that illuminative evaluation can provide are demonstrated clearly by Miller & Parlett (1974) in a study of assessment at Edinburgh University. This is illustrated by how the researchers tackled the analysis of the interviews with final year undergraduates in one department.

"We are not concentrating particularly on individual difference in students' approaches to assessment: indeed we were concerned with what was common or shared. However, when we began the detailed analysis of the data at the end of all the interviews, individual differences began to show up strongly and could not be ignored."

One group of students talked of the need to be perceptive of the "cues" given by the staff and picking up hints about exam topics. A much smaller group of students, besides being aware of the cues and hints given by staff, were actively seeking information about examinations and made a particular point of making a good impression on the staff.

The third group, the largest were not perceptive of cues and considered that sheer hard work was the ingredient of success. These three groups of students were labelled cue-conscious, cue-seeking and cue-deaf respectively.

The point we are making is not the particular content of the finding, although similar things may operate in the O.U., but that by adopting a qualitative methodology, the concept of "cue-consciousness" was identified which had not been predicted in advance. A questionnaire approach to this problem designed from the perspective of the teaching staff or the evaluators would have almost certainly failed to identify this key issue.

Quantitative and goal-orientated research has to assume that the relevant variables have already been identified and can only examine the relationships between these prespecified variables.

How do these alternative approaches to evaluation relate to the work of the Study Methods Group?

(iii) The Approach of the Study Methods Group

As we stated in the introduction to this paper, the Study Methods Group is adopting qualitative methodologies in an attempt to find out how students use O.U. learning materials, why they adopt particular approaches and the content of their learning.

We are planning a programme of research with a view to improving student learning by (i) gaining student experiences of learning on specific courses and (ii) developing a general understanding of student learning and how aspects of course design influence study habits. In some respects we are undertaking evaluation projects, but we are using entirely qualitative methodologies for data collection rather than as a brief priminary stage to quantitative, survey research.

The emphasis on qualitative methods is connected to different assumptions about the learner than traditional experimental or survey methods. The complexity of the individual student and his ability to reflect upon experience are recognised, whereas behaviourist models of learning and traditional evaluation methods ignore the conscious control of the learner over the purpose and strategy in learning, but instead assume students to be passive and easily manipulated by teaching devices.

Our emphasis differs from the background to much evaluation in the O.U. which is based on external, behavioural models of human learning.

The approach of the Study Methods Group is similar to

the alternative approaches to e... uation described above as they are all attempting to make sense of learning activities from the students' perspective. However, there are also important differences.

(i) Firstly, we are concerned with goals or outcomes of learning, but we are using different techniques to establish the content of learning than traditional evaluation. Rather than performance data on tests we are asking students in individual interviews questions to determine their understanding of key concepts taught in the course.

Similar studies of learning outcomes at the University of Goteborg (Dahlgren & Marton, 1978) and the University of Surrey (Osborne & Gilbert, 1979) have proved very valuable and use different methods than using examination scores for looking at what students have learnt from a particular course. (This work on learning outcomes is discussed at length in Study Methods Group Report No. 2.)

(ii) Secondly, in the O.U. distance learning system it is not really possible to get totally "immersed" in the learning environment or milieu, as would be possible in a conventional university; such immersion is an important feature of illuminative evaluation.

In spite of these differences the alternative approaches to evaluation are a good approximation to the methodology and that of a considerable body of research into student learning.

The methodological standpoint of the Study Methods Group is essentially that described by Marton & Svenssen (1979) as a second-order research perspective. They compared this perspective with traditional experimental and survey methods (a first-order perspective) in the following way:

"The traditional perspective in research into student learning focusses attention on the learner in an attempt to find out or to test hypotheses about how he can be

characterized, what he does and how he functions. The learner is the object of our study and we (the researchers) observe him and his behaviour or functioning. We are interested in describing not only the learner but also certain aspects of his world, i.e., his institutional as well as extra-institutional environment. We thus observe the learner and describe him as we see it. We frequently relate our description of the student to our description of his world and generally do this within an explanatory framework.

There is, however, an alternative perspective we can take: the learner's own. In this perspective the world as experienced by him becomes visible. His experience of the world is a relation between him and his world. Instead of two independent descriptions (of the student on one hand and of his world on the other) and an assumed relationship between the two, we have one description which is of a relational character.

There are thus two distinctively different perspectives which we can adopt in relation to research on student learning. One is observational, "from-the-outside" and noumenal, and the other is experiential, "from-the-inside" and phenomenal. These two perspectives are complementary in the sense that neither is derivable from, nor contradicts the other. While the former has been dominant the latter is gaining increasing interest not only in relation to the study of student learning, but more generally in research in the behavioural (human) sciences."

Although there is a considerable literature on student learning from a second-order perspective, which we <u>expect</u> will assist us in making sense and interpreting interview data we are looking for new insights into student learning, particular in the O.U. An important aspect of the methodology and research generally described as qualitative, phenomenological, or ethnographic, is that preconceptions are put aside in the initial handling of interview transcriptions.

Glaser & Strauss (1967) described the advantages of this approach:

"The consequence of the traditional approach is often a forcing of data as well as a neglect of relevant concepts and hypotheses that may emerge ... Our approach, allowing substantive concepts and hypotheses to emerge first on their own, enables the analyst to ascertain which, if any, existing formal theory may help him generate his substantive theories. He can be more objective and less theoretically biased."

Obviously there is an interaction between a researcher's prior knowledge and experience and what is seen inductively

as a "significant observation" or "interesting piece of data".

As Wilson (1977) explained:

"No one, of course, enters a situation a true tabula rasa. Language is itself a limiting factor which provides one set of conceptual tools and screens out others. Similarly, previous experiences influence the scientist's observation and thought. In fact, traditional empirical scientific methods have sought to extrapolate along these lines by asking the researcher to be most explicit and rigorous in the formulation of the perspective underlying the research. There is room in the realms of research, however, for other more inductive approaches where the role of the performed hypothesis and circumscribed data gathering techniques are reduced to a minimum.

Those who work within the anthropological tradition cultivate the skill of suspending (the phenomenologists call it "bracketing") their preconceptions. They study prior research and theory as much as the traditional researcher, but they then purposely suspend this knowledge until their experience with the research setting suggests its relevance."

We have outlined our methodological approach in some detail because qualitative methods, although comprising part of various studies, have not been the dominant research paradigm in I.E.T. and have not previously been treated in such a rigorous manner.

When these methodologies have been used outside the O.U., what insights have been gained into student learning, which may assist us making sense of our data?

3. Research in Student Learning using Qualitative Methodologies

The research literature in this field falls in three areas: (i) students' orientation to study (ii) their approaches to studying and it's relationship to learning outcomes and (iii) students' development as learners.

(i) Orientation to study

By orientation to study we are referring to students overall motivation for undertaking a university course and how this influences their study habits. Longitudinal studies of conventional university undergraduates based on interviews during each year of their study have shown how students can have very different reasons for coming to university and how this effects their approaches to learning and how these reasons and approaches change over time.

Beaty (1978) interviewed a small group of students at the beginning and end of each year of their three year undergraduate course. Open-ended interviews were used to gain an understanding of how students actions appeared in their own terms rather than those of the researcher.

Students approaches to their work seemed to be a product of their reasons for coming to university and their conscious reflection on opportunities and alternatives open to them.

Some students stressed the importance of the university experience as a whole:

"There is a lot to do outside the course. In some respects I do tend to put off work because of it. Its very important to me especially the film unit .... but I try to keep it balanced. From the point of view of education this side is just as important as the academic side and if not .... more important, I suppose; because you can always study in a correspondence course .... but you can't get this kind of social thing anywhere else."

Whereas for other students priorities seemed to be tied to their course work.

"I think the educational experience has been average but the social experience has been marginal because of the way the course was structured .... I haven't joined any societies and I don't do any sport because there is no time left so I feel that the total university experience has been limited."

This study also found that there were importance changes over time of how students tackled the course and also from interaction with other students. For example, as a mature student explained:

"I never came here looking for the grade .... I came here because I wanted to do the course, it was the interest and knowledge not really the degree. But the minute you come here, people are talking about things like 2is and 2iis and immediately there is pressure."

The concept of a "Study Contract" was suggested to link together all the aims, alternatives and opportunities which went to influence what sort of study habits a student adopted and how these changed over time.

In another longitudinal study, Mathias (1978) identified two broad types of learning behaviour in science undergraduates: course-focussed and interest focussed.

Students were interviewed five times throughout their university careers: at the start of the first year, the end of the first term, the end of the first year and then at the end of the second and third years.

Interviews in the first year identified the two broad categories of students. The course-focussed students tended to place exclusive priority on set work and lectures and the course framework with little activity beyond prescribed learning tasks. This group also expressed a strong concern for good assessment grades and tended to prefer well-defined and clearly structured teaching situations rather than open-ended activities.

In contrast the interest-focussed students displayed a more active interest in their major subject and expressed

future career intention in the area. They tended to place their efforts on topics which correspond with their interests and to de-emphasise other parts of the course. They saw the course as providing a framework to them to develop in private study and in line with their particular interests.

It is interesting that from interviews later in students university careers, some had changed between those two categories. Their approach to learning was a dynamic and flexible adaption to a situation which they redefined over time. This was particularly noticeable in the first year, as students attempted to define their role, (Mathias, 1978):

> "During the first term they tried out various approaches to study - they would work over their lecture notes, read recommended books, place a lot of effort into a set work and so on - and they looked to their tutors for cues as to whether their approach to the course was on the right lines."

In contrast to the image of the ideal student, tutors were found to be less interested in independent work than attempts at the set work prescribed. This observation is very similar to the concept of a "hidden curriculum" described by Snyder (1970).

The important feature of these two studies is that students' approaches to studying are shown to be dependent on a wide range of factors which constitute a flexible framework as a context for learning and are thus not explicable within a narrow educationalists view of teaching and learning variables.

The orientation or motivation of Open University students has been investigated in a small study commissioned by the Survey Research Department in I.E.T. (Goodyear, 1975).

Small group discussions were conducted with 6-8 students, from a range of courses and educational backgrounds to give a total sample of about 30 students. Two basic motivations for studying at the Open University were identified:

(i) Qualification - students who want a degree in order to get a better job and who have already had contact with the

academic world and (ii) Compensation - those students who are trying to compensate for feelings of inadaquacy and that the world has cheated them of the position and respect they deserve.

Many of the informants in the later category felt that they had been incorrectly assessed at school and this left them with an extreme need to suceed.

"Well, having failed my 11-plus, to eventually get a degree - they were wrong, I was right and I now have proved it."

"At the moment I intend to pass. I don't think I could live with myself if I failed. If I fail I'm going to be absolutely shattered, so I've got to pass."

The informants looking for compensation were found to express strong feelings of inadequacy with their past experience and their existing life-style, and anxieties about the future.

This study of motivation also attempted to generate hypotheses for why students dropped out from the O.U., particularly those studying for compensation. Goodyear concluded that, compensators are more likely to need recognition, reassurance, warmth and a lot more human contact in order for them to stay the course. One might expect them to have a high anxiety level, which may need to be reduced in the early stages. Their anxiety may prevent them from differentiating between the University as a system and the information to be learned.

Although these findings are somewhat tentative and were aimed at generating hypotheses it seems that the students described as "compensators" will have considerable difficulty studying in the O.U. as they have an inappropriate conception of the learning task. The fear of failure is likely to influence how students tackle their study and interact with all the aspects of the O.U. system.

(ii) Approaches to Studying and the relationship to Learning Outcomes

Marton & Salgo (1976) identified qualitatively different ways in which students approached a particular learning task. These approaches were called deep-level processing, where students were looking for meanings and relating ideas together; in contrast to surface-level processing, where students were trying to remember details and saw learning as a memorization task.

The different approaches to studying were linked directly to the quality of learning outcomes. The details of this work are discussed at length in a separate paper (Gibbs, Morgan & Taylor, 1980a). Similar differences in approaches to learning have been found by Laurillard (1979). Laurillard attempted to link together the research methods of Marton and the "teachback method" of Pask (1976).

In interviews, students were asked to give a brief exposition of a piece of their recent course work and also how they had tackled the learning task and why they were adopting this approach. This was repeated over a variety of different learning tasks. Analysis of interview transcriptions in terms of deep and surface-level processing showed that students approaches varied depending on the context of the learning task. These difficulties are illustrated by some student quotations (Laurillard, 1979):

"I want to understand the theory of what I'm doing to do a good write up and get the results. It's difficult because it's three dimensional and its hard to picture what is going on. I was trying to work out what's happening to this point moving on a surface. I think it's better if you work it out, you have to deduce what you need then you always remember it. I couldn't understand it first time - I just read it to get some idea of what it's about, then went back to get a better idea the second time. I think what I'm trying to do is picture what's going on and see the model they're using."

This description is a sharp contrast to another students account of a different piece of work:

"The main thing is to be able to explain it in the exam. I just try to reason it out and explain how it works. If you can explain how it works it makes it easier to remember. I read it through once then again and over again until I felt I knew their explanations. I'm still not too happy about it, but I take their word for it. I didn't think about anything else. I was just trying to learn it parrot fashion."

These different approaches seem to be determined by students reasons for doing a peice of work; the intrinsic reasons of interest in the subject compared to the purely extrinsic ones of passing an examination.

Similar differences in student motivation have been found in project work compared to conventional course work (Morgan, 1978).

This context dependency of approaches to learning is particularly interesting when quantitative studies of cognitive style (Witkin, 1979) have assumed that cognitive style is relatively constant, similar to a personality characteristic.

(iii) Students' Development as Learners

The studies on motivation and orientation to university work show how students vary their study habits, but how do they develop in their awareness of what constitutes learning and knowledge? Perry (1970) studied a small group of Harvard students by interviewing them during each year of their undergraduate programme. From this vast amount of data certain common themes appeared to emerge:

"We gradually came to feel that we could detect behind the individuality of the reports a common sequence of challenges to which each student addressed himself in his own particular way. For most students their address to these challenges as they experienced them in their academic work, in the social life and their extra curricular activities seemed to represent a coherent development in the forms in which they functioned intellectually, in the forms in which they experienced values and in the forms in which they construed the world. The reports of those few students who did not evidence this development seemed

meaningful as descriptions of deflection from some challenge in the sequence."

Perry identified nine stages in intellectual development as students progressed through their university careers. Although Perry described nine stages the distinctions between them appear to be rather fine in some cases. A simplified view of this scheme can be described in three broad stages of development. Perry's Positions 1, 2 and 3 are concerned with absolutist conception of knowledge. A student quotation illustrates this stage:

"When I went to my first lecture, what the man said was just like God's word, you know, I believed everything he said because he was a professor."

Perry's Positions 4, 5 and 6 correspond to the recognition by students that all knowledge and values, including those of the professors' and authority's, are contextual and relativistic.

The final stages of Perry's scheme, Positions 7, 8 and 9 concern students becoming personally involved and committed to particular ideas, while acknowledging that the world and knowledge are relativistic.

Although the language Perry uses to describe his positions is a little obscure the examples of the educational implications of students intellectual development are very clear. Perry (1970) outlined how students at different stages of development would extract very different meanings from the same lecture:

"Let us suppose that a lecturer announces that today he will consider three theories explanatory of - (Whatever his topic may be). Student A has always taken it for granted that knowledge consists of correct answers, that there is one right answer per problem, and that teachers explain these answers for students to learn. He therefore listens for the lecturer to state which theory he is to learn.

Student B makes the same general assumption but with an elaboration to the effect that teachers sometimes present problems and procedures, rather than answers "so that we can

learn to find the right answers on our own". He therefore perceives the lecture as a kind of guessing game in which he is to "figure out" which theory is correct, a game that is fair enough if the lecturer does not carry it so far as to hide things obscurely.

Student C assumes that an answer can be called "right" only in the light of its context, and that contexts of "frames of reference" differ. He assumes that several interpretations of a poem, explanations of a historical development, or even theories of a class of events in physics may be legitimate theories which can be examined for their internal coherence, their scope, their fit with various data, their predictive power, etc.

What ever the lecturer then proceeds to do (in terms of his own assumptions and intent) these three students will make meaning of the experience in different ways which will involve different assessments of their own choices and responsibilities."

These three examples probably correspond to students at the first two broad stages of development in our simplified scheme of Perry's work.

Perry's scheme of intellectual development has many similarities with Saljo's (1979) work on students' conceptions of learning. It was found that for some students, the nature of learning had a "taken-for-granted perspective", that is as essentially a memorization task and reproduction of facts. In contrast, for other students, at certain points in their careers as learners, the phenomenon of learning in itself has become an object of reflection. In studying, they realise that there are alternative strategies and approaches which can be used in different situations depending on the time available, demands of the task etc. In Saljo's terms learning has become "thematized". (This work is discussed in the Study Methods Group Report No. 2; Gibbs, Morgan & Taylor, 1980a). It seems likely that how O.U. students develop as learners will influence their approaches to using our learning materials. This aspect of research in student learning in the O.U. is particularly important for course design when many courses in Arts, Social Science and some areas of Technology assume that students will adopt a relativistic approach to the subject material.

4. Research into How O.U. Students Learn

From this background of published research in student learning, we see four closely related aspects which are likely to help us understand O.U. students study habits. These are students' orientation to study, their conceptions of learning, their approaches to study and the content of the learning outcomes.

We are looking at these four aspects together in the context of new students taking D101 in 1980. (The details of this study are described in Appendix I). Our preliminary studies on T100 and D101 suggest that there are large variations in students approaches to using course materials. Examples from three T100 students will serve as an illustration:

"I try and read through the unit once, I've only got time to do it once, with the CMA in front of me or the TMA in front of me, and keep referring back to them, referring backwards and forwards all the time, getting the right stuff out to do them, not necessarily the right stuff for the breadth of information, I sometimes read it again and do the CMA and stop where I think the answer is and then when I'm doing the TMA."

This student contrasted this study habit to that on an earlier course:

"I feel I'm cheating, if I do this and pass the exam, I'm literally cheating because its too easy to do it that way. I'm not going to get as much out of it and it's going to add when I eventually get a degree. I'm going to think, oh, I cheated on that point."

Another student doing T100 as his first course after City and Guilds described his studying thus:

"I'm not one of those people who go along with the theory that you should do everything your own way, I like very disciplined ways of working, I like someone to tell me this is important, this is important and you know in my experience I want to be told what to learn or what's relevant. I'm scared that I'm going to miss something that's relevant ..... It was simply a case of going upstairs closing the door, cup of coffee, packet of cigarettes, switching on the light and sitting down and doing it, that's blind reading, simply because I just read it and read it and read it."

In contrast another student appeared to be tackling his study

in a very different way:

"I mean you get a whole page of text, and you know there might be just a sentence of a paragraph that really sums up quite a large section and then I underline that so whan I scan through the unit I can pull out these things and then if I need to, or if I'm interested in that particular bit then I scan through the rest of that page until it focusses your attention when you're looking through some particular aspects of the unit."

These quotations suggest that the qualitatively different approaches to study identified by Marton & Saljo (1976) are also operating in the O.U. context.

In our study on D101, we shall look at how certain approaches to study are related to conceptions of learning, orientations to study and quality of the learning outcomes.

5. How can this Research Inform I.E.T?

What can the research of the Study Methods Group tell I.E.T. and so improve student learning?

By looking at the detail of students' approaches to study, we can improve our understanding of how specific aspects of course design, e.g. S.A.Q's, I.T.Q's, the assessment, project work etc., influence student learning. If we are to understand how to manipulate students' approaches so as to improve student learning, then we also need to understand how approach is influenced by the development of students as learners and their changes in orientation and conception of learning on one hand and the demands of the learning tasks on the other. By following students longitudinally through their studies, we can gain an understanding of this development.

By investigating learning outcomes in terms of students' qualitative conceptions of subject material we can find out more about what students learn, how this relates to traditional measures of assessment, i.e. continuous assessment and examinations, and how outcomes are related to approaches to study.

With this understanding of how students tackle studying, we shall know what to concentrate on in facilitating students' development as learners and providing study skills advice.

These understandings of how O.U. students learn seem to be crucial for developing and strengthening the knowledge base of educational technology.

Appendix I

Research Projects of the Study Methods Group

1. D101 Study

This is our main work in 1980. We are studying a group of 30 students taking D101 as their first O.U. course, (i.e. not transferring in from the Associate Student Programme) with educational backgrounds up to and including level F, i.e., 2 A-levels. The sample has been taken from students attending Milton Keynes, Aylesbury, Bedford, Luton, Hitchin and Hemel Hempstead Study Centres so as to obtain a "local" sample to minimise travelling costs for interviewing.

Students are being interviewed at three stages in the year:

Phase 1

In January and February about (i) their orientation to study in the O.U. (ii) their conceptions of learning and (iii) their understanding of key concepts taught in Blocks 4 and 5 of the course. (The questions on key concepts have been developed and negotiated with the course team.) This stage of the research relates to the work of Beaty, (1979), Mathias, (1980), and Goodyear, (1975) on orientation, the work of Saljo, (1979) on conceptions of learning and that of Dahlgren, (1978) on learning outcomes.

Phase II

Half-way through the course on their approaches to studying Blocks 4 and 5 and completing the associated T.M.A. This relates to the studies of Marton & Sajo, (1976) on levels of processing.

Phase III

At the end of the course, after the examination about their understanding of the same key concepts taught in Blocks

4 & 5 and their orientation to the O.U. and their conceptions of learning. These interviews relate to the same background literature as Phase I.

We see four main outcomes of this project:

(i) The crucial evaluation of the learning outcomes of the course is in terms of the qualitative changes in understanding of key concepts. The categories of understanding against which student learning will be judged will be derived from examination of the variation which is found to exist, and not, as with conventional evaluation, from the course authors pre-specified goals. For example, we have asked students "Is Britain Capitalist?". Analysis of the variation of students' answers will lead to our defining categories of conceptions of capitalism which students actually hold. The benefit to the students of the course will be indicated by how students' conceptions of capitalism at the end of the course are categoriesed, and not by whether they have met the course teams criteria (in course work and exams). It is clear from work at Goteborg that students can meet 'teachers' goals and pass exams without changing their conception of the key concepts on the course (Dahlgren, 1978).

Besides changes in conception of concepts as a result of the course, this study will provide us with descriptions of new students understanding of Social Science concepts. In traditional educational technology terms this is students' entry behaviour, but gained from a qualitative measure rather than a score on a test. We have already fed a preliminary interpretation of this data to the D102 course team to inform their course re-writing for 1982.

(ii) Descriptions of students' orientation to study and their conceptions of learning and how these relate to approach to study.

(iii) Phase II interviews will provide a detailed understanding of how students tackle Block 4 and 5, how they use various teaching strategies in the units.

It is anticipated that certain approaches to study will be associated with significant changes in conceptions of the subject, while others are associated with little significant change in conceptions.

(iv) By following students longitudinally, we shall gain descriptions of their development as learners, brought about by studying D101.

2. D101 Follow-up Study

We intend to follow the same sample of D101 students through their first post-foundation course in 1981 to further explore how they develop as learners and tackle higher-level courses.

3. Preliminary Studies on D101 and T100

As preliminary work for the D101 study above, we conducted interviews at T100 and D100 Summer Schools in 1979 on how students approached their O.U. study.

We have also attempted to use what could be called a "mixed-methodology" developed by Entwistle, Hanley & Hounsell, (1979). These workers have developed a questionnaire inventory, based on constructs derived from interviews, to investigate how students approach studying. We have adapted the Lancaster Inventory for use in the O.U. and have attempted to replicate the Lancaster findings. This formed part of our preliminary studies on T100 & D101 in 1979 and will be reported in another paper, (Gibbs, Morgan & Taylor, 1980b).

4. Future Work

We see two lines for pursuing our work on Study Methods (i) to study how students develop as learners (i.e. the 1981

D101 study) and (ii) the influence of overall course design in influencing students' approach. The second aspect will involve investigating students approach on courses which adopt different curriculum design philosophies, for example, case-studies, project work, flexible assignments etc.

Footnote

We have also applied to the Nuffield Foundation for £1,000 under their scheme of Grants for Innovations in Undergraduate Teaching. This study is based on U204 Third World Studies, using the methodology we have developed in Stage I on D101, to investigate students conceptions of subject matter before they study the course, and to use this data to inform course design. We expect to know the outcome of this application in July 1980.

Appendix II

The Background to the Study Methods Group

From an exercise for generating priorities at the IET Residential Conference at Maryland in January 1978, "study skills" and "study methods" were identified as key areas.

Subsequently through 1978 a series of seminars and meeting was held with the group loosely coordinated by Graham Gibbs. The Study Methods Group received formal recognition in March 1979 when a proposal from Alistair Morgan and Graham Gibbs for a Research Assistant in Course Development was approved. The research assistant, Liz Taylor, joined in October 1979.

The staffing of the Group in 1980 is as follows:

Alistair Morgan - Lecturer, Course Development Division.
currently Head of the Group -
- approx. ⅓ time

Graham Gibbs - Research Fellow, Institutional Research Division.
- full-time

Liz Taylor - Research Assistant, Course Development Division
- full-time

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